

Lab Worksheet: Oh, What a Tangled Web We Weave

Background:

Plants use light energy of the sun to make food. The food is stored in the cells of the plant. Plants are called producers because they make food. Some of the stored energy in the food plants make is passed on to the animals that eat the plants. Plant-eating animals are called primary consumers. Animals that eat other animals are called secondary consumers.

The pathway that food/energy takes through an ecosystem is called a food chain. A food chain also shows the movement of energy from plants to plant eaters and then to animal eaters. An example of a food chain can be written:

seeds → sparrow → hawk

Some of the food energy in the seeds moves to the sparrow that eats them. Some of the food energy then moves to the hawk that eats the sparrow. Normally, only about 10% of the energy produced by the “food” moves to the consumer. Most of the other energy is used to keep the organism alive and allow it to reproduce.

Because a hawk eats animals other than sparrows, you could make a food chain for each animal the hawk eats. If all the food chains were connected, the result is a food web. A food web is a group of connected food chains. A food web shows many energy relationships.

Materials:

- Colored pencils
- Set of “organisms”

Procedure:

Part A. Examining Food Chains

1. Study the food chains listed below.
2. Complete the table on the next page. Checkmark or “X” all the things that each animal listed on the left side eats.

- plant parts → land snail → mouse → raccoon
- plant parts → sparrow → hawk
- plant parts → rabbit → fox
- plant parts → mouse → fox
- plant parts → earthworm → robin → snake
- plant parts → raccoon → fox
- plant parts → rabbit → snake
- plant parts → cricket → robin → fox

- plant parts → earthworm → snake → hawk → fox
- plant parts → rabbit → hawk
- plant parts → small insects → mouse → owl
- plant parts → rabbit → owl → fox
- plant parts → cricket → mouse → hawk
- plant parts → mouse → snake → owl

Feeding Relationships in an Ecosystem

Animals in a Forest Ecosystem	Living Things the Forest Animals Eat												
	Cricket	Earthworm	Hawk	Insects (small)	Land snail	Mouse	Owl	Plants	Rabbit	Raccoon	Robin	Snake	Sparrow
Cricket													
Earthworm													
Fox													
Hawk													
Insects (small)													
Land snail													
Mouse													
Owl													
Rabbit													
Raccoon													
Robin													
Snake													
Sparrow													

Part B: Making a Food Web

1. Use the information in the food chains on page 1 and the table to draw a food web with your lab group on your lab table. Be sure to include the sun and decomposers in your diagram.
2. You may either draw or write the word of the organism. When you have finished, draw arrows from each living thing/energy source to each organism that it passes energy onto.

Questions:

1. In how many food chains do the following animals appear?

hawk _____
owl _____

earthworm _____
snake _____

fox _____
small insects _____

2. In how many food chains do plants (parts) appear? _____

3. List the names of the living things in this forest ecosystem that are producers. _____

4. List those things that are only primary consumers. _____

5. What is another name for an animal that is only a primary consumer? _____
6. List those things that are only secondary consumers _____

7. What is another name for an animal that is only a secondary consumer? _____
8. List the consumers that eat both plants and animals. _____

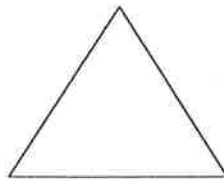
9. What is another name for an animal that eats both plants and animals? _____
10. What would happen to the food web if all the plants were removed? _____

Explain your answer. _____

11. Describe how 3 animals might be affected if owls were removed from the food chain. _____

12. Draw three food chains showing producers and consumers that you might see in your backyard or on your way to school. (You may use words or drawings.)

13. Since about 10% of the energy produced by a level in a food chain is passed on to its predator, there have to be many more "prey" than "predators". Draw a food pyramid of the first food chain listed in Part A. Remember that there are more producers than primary consumers, more primary consumers and secondary consumers, etc.



14. If 2000 kcal of energy are available in grass, how much energy would be available to the cow that eats the grass? To the human that eats the cow?
15. Which organism in this food web has the greatest influence on the ecosystem? Justify your answer.

